इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 2249 (1984): Adhesives (Liquid) for Leather-Beltings
[PCD 12: Plastics]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

IS : 2249 - 1984

(Reaffirmed 2003)

Indian Standard

SPECIFICATION FOR ADHESIVES (LIQUID) FOR LEATHER-BELTINGS

(*First Revision*)

UDC 668·36 : 621·85·052 : 685·2

© *Copyright* 1984

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 4

May 1984

Indian Standard

SPECIFICATION FOR ADHESIVES (LIQUID) FOR LEATHER-BELTINGS

(First Revision)

Adhesives Sectional Committee, PCDC 15

Chairman	*Representing*
Shri G. R. Inamdar	Directorate General of Technical Development, New Delhi
Members	
Dr V. R. B. Mathur (*Alternate* to Shri G. R. Inamdar)	
Shri A. R. Basu	Printing and Stationery Department, Government of India, Calcutta
Shri H. Mitra (*Alternate*)	
Shri T. L. Bhatia	Indian Posts and Telegraphs Department, Jabalpur
Divisional Engineer (Telegraphs) (*Alternate*)	
Shri D. Chakravarty	Dunlop India Ltd, Calcutta
Shri S. Sahgal (*Alternate*)	
Shri A. K. Chandra	Chandras' Chemical Enterprises (P) Ltd, Calcutta
Shri N. G. Banerjee (*Alternate*)	
Dr D. K. Das	National Test House, Calcutta
Shri Anilendo Ghosh (*Alternate*)	
Shri C. Gordhandas	Indian Gum Industries Ltd, Bombay
Shri D. K. Merchant (*Alternate* I)	
Shri J. S. Palav (*Alternate* II)	
Dr S. N. Iyer	Johnson & Johnson Ltd, Bombay
Dr P. K. Manna (*Alternate*)	
Dr L. D. Khandpal	Ministry of Defence (R & D), New Delhi
Dr Amar Singh (*Alternate*)	
Dr N. R. Kondekar	Kondivita Pvt Ltd, Bombay
Shri K. S. Kulkarni	Carona Sahu Co Ltd, Bombay
Shri A. R. Parikh (*Alternate*)	
Shri N. G. Maitra	Sulekha Works Ltd, Calcutta
Dr S. D. Nandy (*Alternate*)	

(*Continued on page* 2)

© *Copyright* 1984
INDIAN STANDARDS INSTITUTION
This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(*Continued from page* 1)

Members	*Representing*
Shri N. G. Maitra	Stationery and Office Equipment Association of India, Calcutta
Shri P. R. Malhan	Office of the Development Commissioner, Small Scale Industry, New Delhi
Shri D. P. Singh (*Alternate*)	
Dr W. Millns	Indian Rubber Manufacturers' Research Association, Bombay
Shri N. B. Fegade (*Alternate*)	
Dr H. A. Monteiro	Ciba of India Ltd, Bombay
Shri A. P. Baji (*Alternate*)	
Shri S. K. Paul	Bata India Ltd, Calcutta
Shri D. Banerji (*Alternate*)	
Shri A. S. Rajadhyaksha	Corn Products Co (India) Ltd, Bombay
Shri S. R. Palekar (*Alternate*)	
Shri R. M. V. G. K. Rao	National Aeronautical Laboratory (CSIR), Bangalore
Dr R. Ramaswamy	Indian Space Research Organization, Trivandrum
Dr S. K. Gupta (*Alternate*)	
Shri T. N. Rawal	Ministry of Defence (DGI), New Delhi
Shri O. P. Gupta (*Alternate*)	
Shri N. P. Sarnayak	India Security Press, Nasik
Shri Ganga Parkash (*Alternate*)	
Dr H. C. Srivastava	Ahmadabad Textiles Industries Research Association, Ahmadabad
Shri M. M. Gharia (*Alternate*)	
Dr Ravi Talwar	The Paper Products Ltd, Bombay
Shri M. S. Saxena, Director (P & C)	Director General, ISI (*Ex-officio Member*)

Secretary

Smt Vijay Malik
Assistant Director (P & C)

Adhesives for Leather Industry Subcommittee, PCDC 15 : 3

Convener	
Dr L. D. Khandpal	Ministry of Defence (R & D)

Members	
Shri I. L. Munje (*Alternate* to Dr L. D. Khandpal)	
Shri D. K. Chakravarty	Dunlop (India) Ltd, Calcutta
Shri S. Sahgal (*Alternate*)	
Shri A. K. Chandra	Chandras' Chemical Enterprises Pvt Ltd, Calcutta
Shri N. G. Banerjee (*Alternate*)	
Shri P. B. G. Dastidar	Bata (India) Ltd, Calcutta
Shri S. K. Paul (*Alternate*)	

(*Continued on page* 13)

Indian Standard

SPECIFICATION FOR ADHESIVES (LIQUID) FOR LEATHER-BELTINGS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 January 1984, after the draft finalized by the Adhesives Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

0.2 This standard was first published in 1963 and covered requirements for adhesives based on nitrocellulose. However, it has now been found that adhesives based on polychloroprene are being increasingly used for the purpose. The standard is, therefore, being revised to cover both nitrocellulose and polychloroprene based adhesives. Adhesion strength of joint at splice has been modified while the flexibility test for the dried film has been deleted. Some modifications have also been made in the test methods.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for liquid adhesives used for leather beltings.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

---

*Rules for rounding off numerical values (*revised*).

2.1 Adhesion Strength — The minimum force required to cause failure of the adhesive bond.

2.2 Open Assembly Time — The time elapsing between the application of adhesive and the assembly of the components of the joint.

3. REQUIREMENTS

3.1 Description — The material shall be uniform in consistency free from lumps, dirt or other suspended matter.

3.2 Open Assembly Time — The open assembly time of the adhesive shall be as agreed to between the purchaser and the supplier and shall not vary from batch to batch.

3.3 Adhesion Strength — The adhesion strength shall be as prescribed in **3.3.1**, **3.3.2** and **3.3.3**.

3.3.1 *Strength of Joint at Splice* — When tested as prescribed in Appendix A, the joint in the test specimen, prepared as prescribed in **A-3.1**, shall not show any separation at a load of 17·5 MN/m^2. (approx 175 kgf/cm^2), after conditioning in standard atmospheric conditions (*see* **A-5.1**) and not less than 13·0 MN/m^2 (approx 130 kgf/cm^2) after heat ageing (*see* **A-5.2**) and immersion in water (*see* **A-5.3**).

3.3.2 *Strength of Joint in Shear* — When tested as prescribed in Appendix B, the joint in the test specimen, prepared as prescribed in **B-3.1**, shall have shear strength not less than 4·0 MN/m^2 (approx 40 kgf/cm^2) after conditioning in standard atmospheric conditions (*see* **B-4.1**) and not less than 3·0 MN/m^2 (approx 30 kgf/cm^2) after heat ageing (*see* **B-4.1**) and immersion in water (*see* **B-4.1**).

3.3.3 *Peeling Load Test* — When tested as prescribed in Appendix C, the joint in the test specimen, prepared as prescribed in **C-3.1**, shall withstand a load of not less than 5 kg after conditioning in standard atmospheric conditions (*see* **C-4.1**) and not less than 3·5 kg after heat ageing (*see* **C-4.1**) and immersion in water (*see* **C-4.1**).

3.4 Flexibilty Test — The test for flexibility of the adhesive shall be carried out as prescribed in **3.4.1**.

3.4.1 *Test at Splice* — The joint in test specimen, prepared as prescribed in **A-3.1**, shall not open when the test specimen is bent through an angle of 180° round a mandrel of 25 mm diameter.

3.5 Shelf Life — The material, when stored in original unopened containers at temperatures up to 40°C, shall continue to satisfy the requirements prescribed in **3.1** to **3.4** for a period of at least two years from the date of manufacture in the case of nitrocellulose based adhesives and at least one year in the case of polychloroprene based adhesives.

4. PACKING AND MARKING

4.1 The material shall be securely packed as agreed to between the purchaser and the supplier.

4.2 The packages shall be marked legibly and indelibly with the following information:

a) Name and nature of the material, that is whether nitrocellulose or polychloroprene based;

b) Manufacturer's name and recognized trade-mark, if any;

c) Volume of the material in the package;

d) Date of manufacture;

e) Expiry date (month and year) indicated by the words "USE BEFORE".

f) Identification in code or otherwise to enable the batch of manufacture to be trade back from records; and

g) Directions for storage and application.

4.2.1 The packages may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors may be obtained from the Indian Standards Institution.

5. SAMPLING

5.1 Preparation of Test Samples — Representative test samples of the material shall be prepared as prescribed in Appendix D.

5.2 Number of Tests — Tests for the determination of all the requirements of the specification given in **3** shall be performed on each of the individual samples separately.

5.3 Criteria for Conformity — A lot shall be declared as conforming to the requirements of this specification, if the different test results as obtained under **5.2** meet the corresponding requirements given in this standard.

6. TESTS

6.1 For carrying out tests prescribed in **3**, the sample shall be prepared according to directions of the manufacturer. The prepared sample shall be of a consistency suitable for application with a brush or spatula.

APPENDIX A

(*Clause* 3.3.1)

TEST FOR STRENGTH OF JOINT AT SPLICE

A-0. GENERAL

A-0.1 The tensometer method of test has been prescribed in this standard. However, dead load method may be used as an alternative method but in the case of dispute the tensometer method given in **A-1 to A-4** shall be used.

A-1. APPARATUS

A-1.1 Any suitable motor driven tensile strength, testing machine may be used. The capacity of the machine shall be such that any reading taken during or on completion of the test shall fall within the loading range (loading range being the range within which the indicated load shown after calibration is correct within ± 1·5 percent). The speed of the moving head of the tensometer, when running free, shall be 250 ± 50 mm per minute. The pendulum shall be free to move forward and backward, that is, the pawls shall be disengaged.

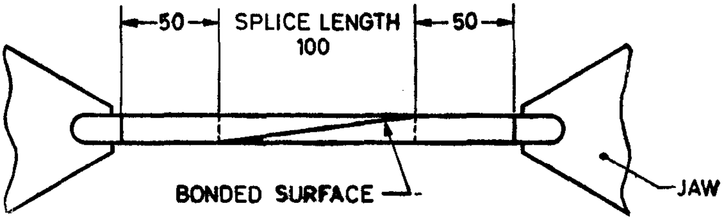
A-2. NUMBER OF TEST SPECIMENS

A-2.1 Test shall be carried out on 18 test specimens. Twelve test specimens shall be made from vegetable tanned leather belting strips and 6 from chrome tanned leather belting strips.

A-3 PREPARATION OF TEST SPECIMEN

A-3.1 Take two leather belting strips of uniform thickness between 5 to 6 mm. Square the ends of the strips before splicing. Make a splice of 100 mm in length of each strip. Apply two coats (*see* Note) of the material on each splice and allow the coated splices to dry till the coating attains maximum tackiness. Join the coated splices in the manner shown in Fig. 1. Press the joint and air-dry or age the same as per the directions of the manufacturer to enable the joint to attain its full bond strength.

NOTE — The number of coats of the material may be as agreed to between the purchaser and the supplier.



All dimensions in millimetres.

FIG. 1 ARRANGEMENT OF TEST SPECIMEN FOR DETERMINATION OF JOINT STRENGTH AT SPLICE

A-4. PROCEDURE

A-4.1 Measure the width of each test specimen to the nearest 0·1 mm at three positions, taking one measurement at the centre line of the splice joint and other two at a position approximately 20 mm on each side of the centre line of the splice joint. Take the arithmetic mean of the three measurements as the width of the specimen.

A-4.2 Measure the thickness of each test specimen with a dial micrometer. Take the measurement at three positions along the linear axis, one at the mid-point of the banded section and one each at approximately 20 mm from it on either side. Take the arithmetic mean of the three measurements as the thickness of the specimen.

A-4.3 Calculate the area of cross-section of each specimen by multiplying the width with the thickness of the specimen as measured under **A-4.1** and **A-4.2** respectively. With the pair of jaws of the tensile strength testing machine 200 mm apart, clamp the specimen (*see* Note) as shown in Fig. 1, in such a way that the specimen is symmetrically situated between the pair of jaws and that the load, when it is applied, is directly along the central axis of the specimen (on the instant when it is clamped, the grain surface of the specimen shall be in one plane). Run the machine until the specimen is subjected to a stress of 17·5 MN/m^2 (approx 175 kgf/cm^2) cross-section. Keep the test specimen for 5 minutes under tension. Release the load and examine the test specimen.

NOTE — The test specimen shall be clamped in the jaws at a distance of 50 mm on each side from the lip (tip) of the splice end. Now the whole length of the specimen between the jaws is 200 mm in length.

A-4.4 The material shall be taken to have passed the test if in all the 18 test specimens, the joint does not show any separation after the application of the stress.

A-5. CONDITIONING

A-5.1 Standard Atmospheric Conditions — Six test specimens made from vegetable tanned leather shall be conditioned for 24 hours at a temperature of 27 ± 2°C and 65 ± 5 percent relative humidity.

A-5.2 Heat Ageing — Six test specimens made from chrome tanned leather shall be kept in an air-oven maintained at a temperature of 70 ± 2°C for 100 hours.

A-5.3 Immersion in Water — Six test specimens made from vegetable tanned leather shall be kept submerged in distilled water at 27 ± 2°C for 24 hours.

A-6. REPORT

A-6.1 The mean of the six values obtained for each test shall be recorded as the joint strength at splice provided the values do not vary by more than 10 percent.

APPENDIX B

(*Clause* 3.3.2)

TEST FOR SHEAR STRENGTH OF JOINT

B-1. APPRATUS

B-1.1 A tensile testing machine as prescribed in **A-1.1**, with a rate of traverse 450 ± 50 mm per minute shall be used.

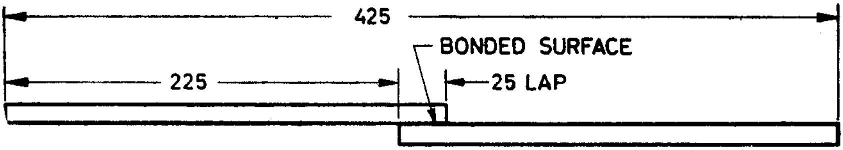
B-2. NUMBER OF TEST SPECIMENS

B-2.1 Test shall be carried out on 18 test specimens as prescribed in **A-2.1**.

B-3. PREPARATION OF TEST SPECIMEN

B-3.1 Take two belting strips of uniform thickness and apply two coats (*see* Note) of the material on each strip over a length of 25 mm from one end of the flesh side of the strip after exposing a fresh surface by buffing. Allow the coated strips to dry till the coating attains maximum tackiness. Join the coated strips together in such a manner that the free ends of the strips lie in opposite direction (*see* Fig. 2). Press the joint and air-dry or age the same as per the directions of the manufacturer to enable the joint to attain its full bond strength. Trim the test specimen to a length of 425 mm and width of 25 mm.

Note — The number of coats of the material may be as agreed to between the purchaser and the supplier.



All dimensions in millimetres.

FIG. 2 TEST SPECIMEN FOR SHEAR STRENGTH OF JOINT

B-4. CONDITIONING

B-4.1 Conditioning shall be done as prescribed in **A-5.1** to **A-5.3**.

B-5. PROCEDURE

B-5.1 Fix the two free ends of the test specimen in the two jaws of the testing machine which shall be at a distance of 125 mm apart. Start the machine and record the load required to separate or break the joint, whichever is less.

B-6. REPORT

B-6.1 The mean of the six values obtained for each test shall be recorded as shear strength of the joint, provided the values do not vary by more than 10 percent.

APPENDIX C

(*Clause* 3.3.3)

PEELING LOAD TEST

C-1. APPARATUS

C-1.1 A tensile testing machine as prescribed in **A-1.1** with a rate of traverse 50 mm per minute shall be used.

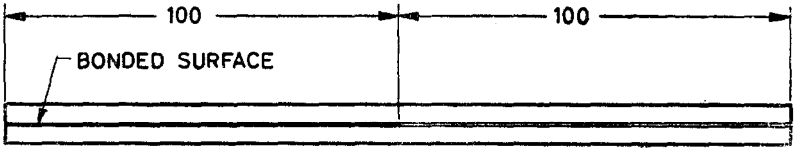
C-2. NUMBER OF TEST SPECIMENS

C-2.1 Test shall be carried on 18 test specimens as prescribed in **A-2.1**.

C-3. PREPARATION OF TEST SPECIMEN

C-3.1 Take two belting strips of 3·0 ± 0·2 mm thickness and apply two coats (*see* Note) of the material over a length of 100 mm from one end of the flesh side of the strip. Allow the coated strips to dry till the coating attains maximum tackiness. Join the coated strips together in such a manner that the free ends of the strips lie in the same direction (*see* Fig. 3). Press the joint and air-dry or age the same as per the directions of the manufacturer to enable the joint to attain its full bond strength. Trim the test specimen to a length of 200 mm and width of 25 mm.

NOTE — The number of coats of the material may be as agreed to between the purchaser and the supplier.



All dimensions in millimetres.

FIG. 3 TEST SPECIMEN FOR PEELING LOAD TEST

C-4. CONDITIONING

C-4.1 Conditioning shall be done as prescribed in **A-5.1** to **A-5.3**.

C-5. PROCEDURE

C-5.1 Fix the two free ends of the test specimen in the two jaws of the testing machine which shall be at a distance of 150 mm apart. The pawls shall be disengaged so that the pendulum may move to and fro. Start the machine and record the load required to separate the joint.

C-6. REPORT

C-6.1 The mean of the six values obtained for each test shall be recorded as peeling load of the joint, provided the values do not vary by more than 10 percent.

APPENDIX D

(*Clause* 5.1)

SAMPLING OF LIQUID ADHESIVES FOR LEATHER BELTINGS

D-1. GENERAL REQUIREMENTS OF SAMPLING

D-1.1 Samples shall not be taken in an exposed place.

D-1.2 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

D-1.3 Samples shall be placed in suitable, clean, dry and air-tight glass containers.

D-1.4 Each sample container after filling shall be sealed air-tight and marked with full identification particulars, such as sample number, date of sampling, batch of manufacture of material and other important particulars of the consignment.

D-1.5 Samples shall be protected from excessive variations of temperature.

D-2. SCALE OF SAMPLING

D-2.1 Lot — In a single consignment all the containers of the same size drawn from a single batch of manufacture shall constitute a lot. If a consignment is declared or known to consist of different batches of manufacture or of different sizes of containers, the containers belonging to the same batch and of the same size shall be grouped together and each such group shall constitute a separate lot.

D-2.1.1 Samples shall be tested for each lot for ascertaining conformity of the material to the requirements of the specification.

D-2.2 The number containers (n) to be selected from a lot shall depend on the size of the lot (N) and shall be in accordance with col 1 and 2 of Table 1.

TABLE 1 NUMBER OF CONTAINERS TO BE SELECTED FOR SAMPLING

Lot Size N (1)	Number of Containers to be Selected n (2)
Up to 20	3
21 to 40	4
41 to 80	5
81 to 120	6
121 to 200	8
201 and above	10

Note — In the case of very small lots where the selection of three containers may be uneconomical, the number of containers to be selected and the criteria for judging the conformity of the lot to the specification shall be as agreed to between the purchaser and the supplier.

D-2.3 The containers shall be selected at random and in order to ensure the randomness of selection, a random number table shall be used. In case such a table is not available, the following procedure may be adopted:

> Starting from any container, count them in one order as 1, 2, 3,...... up to r and so on, where r is the integral part of N/n (N being the lot size and n being the number of containers to be selected). Every rth container thus counted shall be withdrawn to give samples for test.

D-3. PREPARATION OF TEST SAMPLES AND REFEREE SAMPLES

D-3.1 To ensure that the sample taken from each container of the contents, the contents shall be mixed thoroughly by shaking or by stirring or both.

D-3.2 After the contents are thoroughly mixed, a small representative portion of the material shall be taken with the help of a suitable sampling instrument from each of the containers selected. (The approximate quantity of material to be taken from each container shall be about one kilogram).

D-3.3 In case it is not possible to attain a thorough mixing by shaking or stirring, small representative portions of the material shall be taken from different parts of the container with the help of a suitable sampling instrument so as to give a representative sample for the container.

D-3.4 The material taken from each container shall be mixed well again and then divided into three equal parts, each forming and individual sample. One set of the individual samples representing the n containers selected, shall be marked for the purchaser, another for the supplier and the third to be used as a referee sample.

D-3.5 All the samples shall be transferred to separate containers. These containers shall then be sealed air-tight and labelled with full identification particulars given in **D-1.4**.

D-3.6 The referee samples, consisting of a set of n individual samples representing n containers selected, shall bear the seals of both the purchaser and the supplier. It shall be kept at a place agreed to between the purchaser and the supplier and shall be used in case of any dispute between the two.

(*Continued from page* 2)

Members	*Representing*
Shri K. J. Janakar	Bayer (India) Ltd, Bombay
Shri N. D. Desai (*Alternate*)	
Shri Atmaram Gopal Joglekar	Prasanna Industries, Pune
Shri K. S. Kulkarni	Carona Sahu Co Ltd, Bombay
Shri A. R. Parikh (*Alternate*)	
Shri R. N. Misra	Tannery and Footwear Corporation of India Ltd, Kanpur
Shri S. D. Joshi (*Alternate*)	
Shri B. C. Nanavati	NANREC Adhesive (P) Ltd, Bangalore
Shri S. J. Nanavati (*Alternate*)	
Shri J. Sinha Roy	The National Tannery Co Ltd, Calcutta
Shri A. Chakraborty (*Alternate*)	
Shri G. Thangraj	Shaw Leiner Ltd, Calcutta
Shri A. Krishnaswamy (*Alternate*)	

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	$1 \text{ N} = 1 \text{ kg.m/s}^2$
Energy	joule	J	$1 \text{ J} = 1 \text{ N.m}$
Power	watt	W	$1 \text{ W} = 1 \text{ J/s}$
Flux	weber	Wb	$1 \text{ Wb} = 1 \text{ V.s}$
Flux density	tesla	T	$1 \text{ T} = 1 \text{ Wb/m}^2$
Frequency	hertz	Hz	$1 \text{ Hz} = 1 \text{ c/s } (\text{s}^{-1})$
Electric conductance	siemens	S	$1 \text{ S} = 1 \text{ A/V}$
Electromotive force	volt	V	$1 \text{ V} = 1 \text{ W/A}$
Pressure, stress	pascal	Pa	$1 \text{ Pa} = 1 \text{ N/m}^2$

INDIAN STANDARDS INSTITUTION
Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002
Telephones : 26 60 21, 27 01 31 **Telegrams : Manaksanstha**

Regional Offices:

		Telephone
Western : Novelty Chambers, Grant Road	BOMBAY 400007	89 65 28
Eastern : 5 Chowringhee Approach	CALCUTTA 700072	27 50 90
Southern : C. I. T. Campus, Adyar	MADRAS 600113	41 24 42
Northern : B69, Phase VII	S.A.S. NAGAR (MOHALI) 160051	8 78 26

Branch Offices :

'Pushpak', Nurmohamed Shaikh Marg, Khanpur	AHMADABAD 380001	2 03 91
'F' Block, Unity Bldg, Narasimharaja Square	BANGALORE 560002	22 48 05
Gangotri Complex, Bhadbhada Road, T.T. Nagar	BHOPAL 462003	6 27 16
22E Kalpana Area	BHUBANESHWAR 751014	5 36 27
5-8-56C, L. N. Gupta Marg	HYDERABAD 500001	22 10 83
R 14 Yudhister Marg, C Scheme	JAIPUR 302005	6 98 32
117/418 B Sarvodaya Nagar	KANPUR 208005	4 72 92
Patliputra Industrial Estate	PATNA 800013	6 28 08
Hantex Bldg (2nd Floor), Rly Station Road	TRIVANDRUM 695001	32 27

Printed at Printograph, New Delhi, India